NOTES ON THE CHALCIDOID *TRICHAPORUS* FOERSTER OF THE FAMILY EULOPHIDÆ, WITH DESCRIPTION OF ONE NEW NORTH AMERICAN FORM FROM ILLINOIS.

BY A. ARSÈNE GIRAULT, BRISBANE, AUSTRALIA.

(Continued from page 52.)

Family Eulophidæ.

Subfamily Tetrastichinæ.

Tribe Tetrastichini.

Trichaporus Foerster, novum Ashmead, 1904.

(*Type*: *Trichaporus melleus* Ashmead.)

1. *Trichaporus melleus* Ashmead.

Ashmead, 1904, p. 512.

" Trichoporus melleus, sp. nov.

"Female: Length, 1.8 mm. Honey yellow, punctate, the eyes brown, the abdomen with a blackish spot on each side near the middle, the scape and legs pale yellowish; flagellum long, filiform, hairy; wings hyaline, the veins pale yellowish. The abdomen is cylindrical, pointed at apex, and as long as the head and thorax united.

" Male: Length, 1.4 mm. Agrees in colour with the female except that the blackish spots near the middle of the abdomen unite and form a transverse band, while the veins in the front wings are brownish. The flagellum is long, and the hairs are much longer than in the female.

" Brazil: Santarem; Chapada."

Type in the Carnegie Museum, Pittsburgh, Pennsylvania.

2. *Trichaporus viridicyaneus* Ashmead.

Ashmead, 1904, p. 512.

" Trichoporus viridicyaneus, sp. nov.

" Female: Length, 2–2.6 mm. Metallic bluish green to blue, punctate; scape, trochanters, apices of all femora, and all tibiæ and tarsi, except the last joint, pale yellowish; flagellum brownish yellow, pubescent; wings hyaline, the veins yellowish. The abdomen is long, cylindrical, twice as long as the thorax, pubescent, the first and second body segments about equal, shorter than the third, the first segment longer than the third, the sixth and seventh short, the seventh conical.

" Male: Length, 1.4–1.5 mm. Agrees well with the female, except in the usual sexual differences and in a slight difference in the colour of the antennæ and legs. The flagellum is darker, with longer hairs, and with only *one* ring-joint, while the front and middle femora are dusky only at base. The abdomen is cylindrical, a little longer than the head and thorax united.

"Brazil: Chapada, in April. Fourteen females, six male specimens."

Types in the Carnegie Museum, Pittsburgh, Pennsylvania.

3. *Trichaporus persimilis* Ashmead.

Ashmead, 1904, p. 512.

"Trichoporus persimilis, sp. nov.

"Female: Length, 2.8 mm. Metallic brown-black, punctate, the abdomen brown beneath; flagellum brown, hairy; scape, pedicel and legs, including the coxæ, honey yellow, the femora more or less dusky or brownish, especially basally; otherwise it is very similar to *T. viridicyaneus* except that the first body segment of the abdomen is twice the length of the second.

"Brazil: Chapada, in April. Two specimens."

Types in the Carnegie Museum, Pittsburgh, Pennsylvania.

4. *Trichaporus æneoviridis*, species nova.

Normal position.

Female: Length, 1.8 mm. Average, moderate for the family.

General colour bright metallic green, with a brassy sheen, the scutellum with a purplish hue in certain lights. Legs pallid yellow, including the apices of the coxæ; tips of apical tarsal joints dusky; antennæ dark, indefinite in colour, the scape paler yellowish, the pedicel and ring-joint slightly paler; venation indefinite, dusky yellowish. Eyes and ocelli dark garnet, the latter moderately large, in a flat isosceles triangle on the vertex, the distance between each about the same as the distance between each lateral ocellus and the margin of the eye.

Head (cephalic aspect) bilobed, longer than wide (dorsal aspect), as wide as the greatest width of the thorax, five times wider than long (cephalo-caudad), squamosely reticulated, the cephalic ocellus at the extreme median apex of the vertex (cephalad), one-third wider across the eyes (cephalo-caudad) than at the median line of the vertex, which is narrowed. Eyes ovate, half the length of the genæ, their surface much rougher than that of the head. Antennæ inserted below (ventrad) the middle of the face, slightly above (dorsad) the ventral ends of the eyes. Genal sulcus broad, distinct.

Mesothorax, including axillæ, scutum, scutellum and parapsides, strongly shagreened, or squamosely reticulated, the pleura less so, polygonally sculptured; dorsum of the metathorax roughly reticulated, or punctate, the median carina moderately strong. Abdomen closely, squamosely reticulated. Scutellum with four conspicuous longitudinal furrows, two on each side of the meson, the lateral ones barely visible from the direct dorsal aspect and at the lateral margin of the sclerite in the dorso-lateral aspect. Parapsidal furrows conspicuous, deep; mesoscutum with a slight carina along the median line. Abdomen ovate, the segments subequal, segment 2 longest, 3 shorter than 4, 5 and 6, widest at segment 4, and about equal in length to the head and thorax combined; caudal margins of the segments straight, or slightly concaved at the meson. Tarsi 4-jointed.

Fore wings hyaline, the marginal fringes short, the discal cilia uniform; postmarginal vein absent, the marginal vein about a fourth longer than the submarginal, the latter broken. Hind wings uniformly ciliate discally. Stigmal vein of fore wings moderate in length, clavate, and with an uncus.

Antennæ 9-jointed; scape about equal in length to the pedicel and first funicle joint combined, inserted not much below the middle of the face; pedicel subconic, over one-third shorter than funicle joint 1; ring-joint inconspicuous but evident; funicle joints 1 and 3 subequal, cylindrical oval, funicle 2 slightly longer, nearly twice the length of the pedicel; the three club joints decreasing in size, the basal joint longer than the pedicel, nearly a third shorter than funicle 3 and a fourth longer than joint 2 of the club; the apical joint conical, smaller than the pedicel, and ending in a short spine-like projection. Antennæ bearing stiff curved bristles, the flagellum longitudinally carinate. Ovipositor not exserted. Mandibles fuscous, tridentate, symmetrical, the outer and next tooth conspicuous, the inner or third tooth one-half shorter than the second, barely defined, its inner (nasal) margin obliquely concaved.

From 33 specimens, ⅔-inch objective, 1-inch optic, Bausch and Lomb.

Male.—Length 1.5 mm., smaller, more slender. The same. Abdomen cylindrical; antennæ slightly lighter in colour, more hairy, the setæ longer, 10-jointed, the same, but the funicle 4-jointed, the first joint distinctly smaller than the others, the ring-joint minute, subobsolete, and the two basal joints of the club subequal in length; funicle joints 2 and 3 equal, longer than 4. Mandibles the same.

From 4 specimens, the same magnification.

Described from four males, thirty-five females, reared in the insectary of the State Entomologist, Urbana, Illinois, May 27, 1908, from, supposedly, a single larva of *Malacosoma americana* (Harris) on apple twigs. On May 18 this supposed lasiocampid larva was dissected and found to contain the pupæ of this species, which emerged as adults on the date mentioned. The host was one of several larvæ sent to the insectary, together with several incidental puparia of a species of *Syrphus*, all of them, with this single exception, being parasitized by a solitary Ichneumonoid. The nature of its parasitism is, therefore, unknown, the host being either a dipteron of the family Syrphidæ, a hymenopteron of the family Ichneumonidæ or the lasiocampid. It is apparently a primary parasite of the latter.

It differs from all other species in the genus in being comparatively smooth, the head, thorax and abdomen squamosely reticulated, not punctate, agreeing somewhat in this respect with *Syntomosphyrum*, Foerster.

Habitat.—Centralia, Illinois (L. M. Smith).

Type.—Accession No. 37,543, Illinois State Laboratory of Natural History, Urbana, Illinois, 3 females, tag-mounted, female antenna in xylol-balsam (1 slide). Cotype No. 12,200, United States National Museum, Washington, D. C., 2 females on tags.

5. *Trichaporus colliguayæ* (Philippi).

Exurus colliguayæ Philippi, 1873, pp. 296–298, taf. 1, figs. 1, 1a, 1e.

Exurus colliguayæ Philippi, de Dalla Torre, 1898, p. 159.

Trichaporus colliguaya (Philippi), Ashmead, 1904, p. 512.

"1. *Gallen des Colliguai.* Taf. 1, fig. 1a-e.

"Man sieht sehr häufig Gallen am untern Theil der Kätzchen des Colliguai, *Colliguaya odorifera* Molina, eines Strauches aus der Familie der Euphorbiaceen, der in den mittleren Provinzen Chile's gemein ist, und dessen Holz beim Brennen angenehm riecht. Fig. 1 zeigt eine solche Galle in natürlicher Grösse. Die unteren zwei Drittel der Axe des Kätchens sind gewaltig aufgetrieben, im Gestalt einer länglich eiförmigen, etwas unregelmässigen Knolle, und tragen auf ihrer Oberfläche noch die schuppenartigen Deckblätter, auf denen die Staubgefässe entspringen, welche mehr oder weniger vollständig entwickelt sind. Schneidet man die Galle durch, so sieht man im Innern derselben eine unregelmässige, von 2–3 mill. dicken Wänden eingeschlossene Höhle, in welcher zahlreiche Maden sitzen. Im Anfang sind die Gallen gelbgrün, später mehr roth, zuletzt, wenn sie beginnen trocken zu werden, braun. Sie sind von mässiger Consistenz, und milchen beim Durchschneiden weniger als die übrigen Theile der Pflanze. Die Maden zeigen nichts Auffallendes; man sieht deutlich mit dem Kopf dreizehn Ringe; sie zeigen keine Spur von Füssen und Augen, etc. Ich sammelte eine Menge dieser Gallen, und

that sie in ein grosses Einmacheglas, um zu sehen, was sich daraus entwickeln würde, vergass aber über andern Geschäften meine Gallen, bis ich nach längerer Zeit in dem Glase viele hundert kleine Pteromalinen, so wie ein Paar grössere einer zweiten Art, aber kein einziges Exemplar einer Gallwespe oder Fliege fand. Ich muss daher glauben, dass die erst erwahnte Pteromaline die Gallen hervorbringt, und die zweite im Larvenzustand die Maden der ersten auffrisst.

"Die Gallen bildende Pteromaline scheint mir ein besonderes Genus bilden zu müssen, und ich habe sie *Exurus Colliguayæ* genannt (ξεουδς "was einen Schwanz bildet, spitz zulauft). Der Körper ist 3 mill. lang, die Flügelgespannung beträgt 7 mill. Das vollkommene Insekt ist ganz schwarz und glänzend, bis auf die untere Hälfte der Schenkel, die Schienen und Tarsen, welche schalgelb sind. Der Kopf ist quer; seine drei Punktaugen liegen in einer graden Linie zwischen[*] den Netzaugen, wie man deutlich an der Puppe wahrnimmt, da deren Körper heller gefärbt ist; am vollkommenen Insekt sind sie schwer zu sehen. Die Fühler entspringen in der Höhe des untern Augenrandes, sind gekniet und nur so lang, das sie, zürückgeschlagen, bis etwas über den Ursprung der Flügel reichen würden, und sind nach dem Geschlecht verschieden, beim Männchen nämlich federbuschartig lang behaart und siebengliedrig, beim Weibchen sehr kurz behaart und sechsgliedrig. Das erste Glied ist keulenförmig und ziemlich dick; es reicht bis an den Scheitel und ist auf der Oberseite schwach behaart, sonst kahl; das zweite Glied ist verkehrt kegelförmig und etwa ein Drittel so lang; das dritte Glied ist beim Männchen an der Basis verdickt, zwei Drittel so lang wie das erste, und ähnlich ist das vierte, fünfte und sechste, nur nimmt ihre Dicke allmählich ab; das siebente ist etwas länger als das vorhergehende, im ganzen walzenförmig, in der Mitte etwas dicker. Das dritte, vierte, fünfte, sechste Glied haben am Grunde einen Wirtel längerer Haare, das siebente ist überall gleichmässig und ziemlich lang behaart. Beim Weibchen sind die beiden ersten Glieder der Fühler ziemlich wie beim Männchen, aber alle folgenden sind walzenförmig und überall gleichmässig behaart; das dritte Glied scheint aus der Verschmelzung von zwei Gliedern entstanden zu sein. Mundtheile habe ich am vollkommenen Insekt nicht bemerkt, obgleich ich an der Puppe an der Stelle zwei braune Punkte gesehen habe, die ich fur die Mandibeln halten möchte.

"Der Hinterleib ist nicht gestielt, verlängert, allmählich zugespitzt, und ist die Spitze beim Weibchen länger; er ist auf der Bauchseite gekielt auf dem Rucken (wenigstens bei trocknen Exemplaren) concav, mit anliegenden, kurzen Härchen bekleidet, aber doch sehr glänzend, so dass man nur schwer erkennen kann, dass er aus sieben Gliedern besteht; an der Puppe ist dies leichter. Die Brust ist fast ganz kahl; der Rucken der Vorderbrust ist klein, kaum so lang wie der Kopf; die Mittelbrust ist ziemlich gross; das Schildchen deutlich, sonst durch nichts ausgezeichnet; die Hinterbrust sanft abschussig. Die Vorderflügel sind dadurch ausgezeichnet, dass der erste und einzige Nerv den Vorderrand selbst bildet bis zu zwei Dritteln der Länge, wo er einen stielförmigen Ast nach hinten und aussen schickt. Die Hinterflügel haben an der Basis keinen Lappen. Die Beine sind lang und schlank, durch nichts Besonderes ausgezeichnet. Die Hüfte ist ziemlich dick; es sind zwei kleine Trochanter vorhanden; der Schenkel ist schlank, in der Mitte mässig verdickt, schwach und kurz behaart; die Schiene ist ziemlich walzenförmig,† und tragt am Ende einen kurzen Dorn. Die Tarsen sind kurzen als die Schienen, bedeutend dunner, walzenförmig; die einzelnen Glieder sind schwer zu unterscheiden; es sind ihrer fünf; das erste Glied ist das längste, das vierte und fünfte sind zusammen kaum länger als das dritte. Sehr lang sind die beiden Haftenlappen, fast länger als das fünfte Glied, während die Klauen sehr klein sind, nämlich kaum halb so lang wie das funfte Glied dick ist.

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[*] Beginning p. 297.

"Da ich mich sehr wenig mit dem Studium der Hymenopteren, namentlich der kleineren, beschäftigt habe, so muss ich es anderen Entomologen überlassen, zu entscheiden, welches die genauere Stellung dieses Insektes im System ist; in den wenigen, einschlägigen Büchern, die mir zu Gebote stehen, habe ich, wie gesagt, kein Genus finden können, in welches ich dasselbe hätte einordnen können.

"In der Abbildung auf Taf. 1 ist fig. 1d eine Galle, von aussen gesehen; fig. 1e dieselbe aufgeschnitten; 1 das weibliche Insekt, vergrössert; die darunter stehenden Linien geben die Grösse an; 1a ist ein stark vergrösserter Fühler des Männchens, 1b des Weibchens, 1c der Tarsus." Pp. 296-298.

The form of this species, as shown in the figure, is similar in general to that of *Trichaporus*, but the tarsi are 5-jointed, the antenna 6-jointed in the female, the scutellum small and apparently without grooves, the parapsidal furrows apparently absent, the body not punctate, and other characters, which make its present position questionable. I think, however, that Ashmead has placed it as well as circumstances allow. I

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†Beginning p. 298.

do not know of existing specimens, but there are probably some in the Naturhistorische Museum, St. Yago, Chile.

6. *Trichaporus columbianus* (Ashmead).
Euderus columbiana Ashmead, 1888, pp. 104-105.
Euderus columbianus Ashmead, de Dalla Torre, 1888, p. 6.
Trichoporus columbianus Ashmead, 1900, p. 561.

"*Euderus* Haliday.

"(14) *Euderus columbiana*, n. sp.

"♀. Length, 10 inch. Dull brown, or bronzy-green, its whole surface, including the abdomen, strongly, confluently punctate. Head transverse, not wider than the posterior part of the mesothorax, and with only a slight antennal groove in front. Antennæ about as long as the thorax,‡ eight-jointed; scape slender, yellowish brown; flagellum dark brown, about twice as long as the scape, pubescent, the pedicel shorter than the funicle joint, the latter joint the longest, about twice as long as wide, the following joints being not much longer than wide, sub-moniliform. Thorax: collar transverse, rounded before; mesothorax with parapsidal grooves well defined; scutellum longer than wide, without grooves, rounded behind, sides parallel. Abdomen conic-ovate, cylindric, one-third longer than head and thorax together, the segments of nearly equal length. Legs dark brown, trochanters, knees, fore and middle tibiæ, and all the tarsi honey-yellow, hind tibiæ dusky in the middle. Wings hyaline, fringed with short ciliæ; the veins brown, the marginal is twice the length of the submarginal, the stigmal short, while the postmarginal is wanting.

"Hab.—Florida and District of Columbia."

I have been unable to connect, directly, *Euderus columbianus* Ashmead with *Trichaporus columbianus* Ashmead listed in Smith's (1900) Catalogue of the Insects of New Jersey, but as I cannot, in addition, find the original description of the latter, conclude that they are synonymic and that Ashmead intended the former species.

In characters, the species does not agree with either genus (*Euderus* Haliday or *Trichaporus*), as now limited (but does with the definition of Foerster, 1856), and can hardly belong to the Tetrastichini as limited by Ashmead (1904), the scutellum having no grooves. From the description of the species quoted in foregoing, being an eulophid with a long marginal vein, short submarginal and stigmal veins, without a postmarginal vein and grooves on the scutellum, with 8-jointed antennæ and complete parapsidal furrows (implied) sessile abdomen, the species falls near the omphalinine genus, *Closterocerus* Westwood. As I have not seen the species, however, I think that Ashmead's later determination should be accepted for the present, and so I have included it here.*

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‡Ending p. 104.

Smith (1900), gives the following note concerning this species: "Lives in Cecidomyid galls, widely distributed (Ashm.)." The species occurs in Florida, District of Columbia and New Jersey.

The types are probably in the United States National Museum, Washington, D. C.

Table of Species.

This table is constructed from the literature, and caution should therefore be exercised in identifying species by its aid alone. It forms merely an index to the species included within the group.

Females.

A. Species metallic bronze-greenish to bluish or brownish.

a. Dull brown or bronzy-green, confluently punctate.

Flagellum dark brown; scutellum without grooves; legs dark brown and honey-yellow..........*columbianus* (Ashmead).

b. Metallic brown-black.

Flagellum brown; scutellum with grooves; legs and coxæ honey-yellow, with some brownish on femora..*persimilis* Ashmead.

c. Metallic blue-green, punctate.

Flagellum brown-yellow; scutellum with grooves; tibiæ and tarsi pallid yellow, femora and coxæ green..........................*viridicyaneus* Ashmead.

d. Metallic, shining, bright green, brassy, squamosely reticulated.

Flagellum dusky, neutral; scutellum with four grooved lines; legs uniformly pallid yellow, the coxæ metallic green..............................*æneoviridis* Girault.

B. Species shining black.

a. Flagellum black; legs yellow and black; scutellum without grooves... ....*colliguayæ* (Philippi).

C. Species honey-yellow.

a. Flagellum yellow; punctate; legs pallid yellow.*melleus* Ashmead.

D. Species bright metallic green, brassy; squamosely reticulated.

a. Metathorax punctate; scutellum with four grooved lines; legs

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*It may be that *Trichaporus* Foerster, with Ashmead's *columbianus* as type, could be resurrected, while the group of Ashmeadian species now forming the genus, as here proposed, including the new species, could be renamed.

pallid yellow, the coxæ metallic green; flagellum dusky, the scape and pedicel paler................*æneoviridis* Girault.

Literature referred to.

1856. Foerster, Arnold.—Hymenopterologische Studien, Aachen, II, pp. 83, 84, 85.

1866. Taschenberg, E. L.—Die Hymenopteren Deutschlands nach ihren Gattungen und theilweise nach ihren Arten als Wegweiser für angehende Hymenopterologen, *etc.* Leipzig, p. 109.

Trichaporus Foerster.—Date of publication not given; preface dated August, 1865, Halle.

1867. Kirchner, Leopold.—Catalogus hymenopterorum europæ, Vindobonæ, p. 186, No. 700.

"700.—G. Trichaporus Förster, Hym. Stud. II 85. 1, Tr. Sp.?"

1872. Walker, Francis.—Notes on Chalcidiæ, London, Part VI, pp. 104-105.

Translation of Foerster (1856).

1873. Philippi, Rudolph Amandus.—Chilenische Insekten beschrieben von Dr. R. A. Philippi. (Stettinger) Entomologischer Zeitung. (Herausgegeben von dem entomologischen Vereine zu Stettin), Stettin, XXXIV, pp. 296-298, Taf. I, figs. 1, 1a—1e.

1888. Ashmead, William Harris.—Descriptions of some new North American Chalcididæ. Can. Ent., London, Ontario, XX, pp. 104-105.

1898. De Dalla Torre, Carl G.—Catalogus Hymenopterorum hujusque descriptorum systematicus et synonymicus, Lipsiæ, V, pp. 27, 159.

1900. Ashmead, William Harris, in John Bernhard Smith.—Insects of New Jersey. A list of species occurring in New Jersey, *etc.* Supplement, 27th Annual Rep. State Board of Agr., Trenton, p. 561.

Trichoporus columbianus Ashmead.

1900. Smith, John Bernhard.—*Vide* Ashmead, 1900.

1904. Ashmead, William Harris.—Classification of the Chalcid flies or the superfamily Chalcidoidea, with descriptions of new species, *etc.* Memoirs of the Carnegie Museum, Pittsburgh, Pennsylvania, I, No. 4 (Publications of the Carnegie Museum, Serial No. 21), pp. 348-350, 392, 512.

1907. Scheniedéknecht, Otto.—Die Hymenopteren Mitteleuropas, *etc.*, Jena, pp. 489, 490.

Same as Ashmead (1904); table of genera.

1909. Idem.—Genera Insectorum (dirigés par P. Wytsman), Bruxelles, 97 me fascicule, Family Chalcididæ. pp. 427, 464, 465, 468.

Table to the genus as in Ashmead (1904); brief diagnosis of the genus, listing *colliguayæ*, *melleus*, *persimilis* and *viridicyaneus*, *Euderus columbianus* (p. 427).

(See also Kieffer, bionomic note on *colliguayæ*, Révista Chilena de Historia Natural. Orgáno del Museo de Valpaiso, VII, p. 111.)

NEW AFRICAN *TIPULIDÆ.*

BY C. P. ALEXANDER, ITHACA, N. Y.

The following species were given by Mr. Chas. W. Howard to Prof. Needham, and later turned over to me for examination. There were four specimens, representing three species, of which two are herein characterized as new. Mr. Howard's remark, that "the species were as thick as gnats," is interesting.

Styringomyia howardi, n. sp.

Holotype.—♂, brown and gray; length, 5.25 mm.; width, 4.75 mm.

Mouthparts dark brownish black; palpi, first segment very short; second segment large, oval, brown, apical third black; third more slender, brown, apical two-thirds black; terminal segment about as thick as the penultimate. Antennæ: first segment elongated, gray; second oval, enlarged at the distal end, remaining segments oval, gradually becoming more elongated to the tip; segments with a short pubescence and long irregular hairs, which are scarcely verticillate; first segment gray, second dark brown at tip, yellowish at base; remaining segments pale brownish yellow, the hairs darker; ommatidia large, coarse, black; front, vertex, genæ and occiput gray, with stout, scattered black bristles.

Pronotum large and prominent, showing an unusually generalized condition; the scutellum U-shaped, encircling the cephalic margin of the mesothoracic præscutum, with about three prominent bristles on the lateral margin; the scutum is narrower, running to an obtuse point cephalad, with a group of bristles along the lateral margin. Mesonotum: præscutum with a row of bristles along each side of the median line and a row along the lateral margin, this row incurving near the cephalic margin of the sclerite; scutum with four bristles on each half; the scutellum with a bristle on either side of the median line; postscutum and metanotum unarmed. Pronotum brown, pale apically, with an inverted U-shaped pale mark on the scutum; mesonotum præscutum, middle line pale, remainder